Date: Thursday, 2/14/2008 10:56:27 AM
User: Kim Johnston

Process Sheet

Customer	: CU-DAR001 Dart Helicopters Services
Job Number	: 37420
Estimate Number	: 11596
P.O. Number	:
This Issue	: 2/14/2008 S.O. No. :
Prsht Rev.	: NC
First Issue	: / / Type : MACHINED PARTS
Previous Run	:
Written By	:
Checked & Approved By	: [signature] 08.02.14
Comment	: Est: A 04.07.16 New Issue KJ/JLM set B 07.08.07 ECN930 EC verified by:JLM

Drawing Name	: SADDLE LH (209)
Part Number	: D29171
Drawing Number	: D2917 REV B
Project Number	: N/A
Drawing Revision	: B
Material	:
Due Date	: 3/3/2008 Qty: 6 Um: Each

Additional Product

Job Number:

Seq. #:	Machine Or Operation:	Description :
1.0	D6102010	6061-T6 8.25x7.95x2.5

Comment: Qty.: 1.0000 Each(s)/Unit Total : 6.0000 Each(s)
6061-T6 8.25x7.95x2.5
Cut blanks: 2.500" x 8.250" x 7.950" grain along 7.950"
Material: 6061-T6/T651 (QQ-A-250/11)
(D6102-010)
Identify as D2917-1
Batch: B37600 SA 08/03/10 6

Seq. #:	Machine Or Operation:	Description :
2.0	HAAS1	HAAS CNC VERTICAL MACHINING #1

Comment: HAAS CNC VERTICAL MACHINING #1
Program batch number

Machine Step No 1 as per Folio FA436 and visually inspect as per Dwg D2917 & attached Dimension Sheet

Machine Step No 2 as per Folio FA436 and visually inspect as per Dwg D2917 & attached Dimension Sheet

Machine Step No 3 as per Folio FA436 and visually inspect as per Dwg D2917 & attached Dimension Sheet

Deburr SA / JMK 08/03/12 6

Seq. #:	Machine Or Operation:	Description :
3.0	MILLING CONV.	CONVENTIONAL MILLING MACHINE

Comment: CONVENTIONAL MILLING MACHINE

Machine Keyway and inspect per Dwg D2917 & attached dimension sheet JMK 08/03/12 6

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: ________ **PAR #:** ______ **Fault Category:** ________ **NCR:** Yes No **DQA:** [illegible] **Date:** 08/03/12

QA: N/C Closed: _____ **Date:** _________

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B: Initial Chief Eng	Action Description Chief Eng	Sign & Date	Verification Section C	Approval Chief Eng	Approval QC Inspector
08.03.11	2	THICKNESS AT SADDLE-TO-CROSSTUBE WALL IS 0.167 (MIN) -ON QTY(2) PARTS	08.03.11 PC 951042	Margins still positive (see attached calcs). Parts acceptable.	08/03/12	08/03/12	08.03.11 PC 951042	08/03/12

NOTE: Date & initial all entries

Date: Thursday, 2/14/2008 10:56:27 AM
User: Kim Johnston

Process Sheet

Customer: CU-DAR001 Dart Helicopters Services

Drawing Name: SADDLE LH (209)

Job Number: 37420

Part Number: D29171

Job Number:

Seq. #:	Machine Or Operation:	Description :
4.0	QC2	INSPECT PARTS AS THEY COME OFF MACHINE
	Comment: INSPECT PARTS AS THEY COME OFF MACHINE	ML 08/03/12 6
5.0	QC8	SECOND CHECK
	Comment: SECOND CHECK	BG 08.03.12 6
6.0	HAND FINISHING1	HAND FINISHING RESOURCE #1 6X
	Comment: HAND FINISHING RESOURCE #1 Acid etch and Alodine as per QSI 005 4.1	M 08/03/13
7.0	POWDER COATING	POWDER COATING 6X
	M 10700 S	
	Comment: POWDER COATING Powder Coat White Gloss (Ref: 4.3.5.1) as per QSI 005 4.3	M 08/03/13
8.0	QC3	INSPECT POWDER COAT/CHEMICAL CONVERSION
	Comment: INSPECT POWDER COAT	GL 08-03-13 X6
9.0	PACKAGING 1	PACKAGING RESOURCE #1
	Comment: PACKAGING RESOURCE #1 Identify and Stock Location: 57420	AS 08/03/14 X6
10.0	QC21	FINAL INSPECTION/W/O RELEASE 6
	Comment: FINAL INSPECTION/W/O RELEASE	08/03/18

Job Completion

U 08.03.17

Form: rprocess

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: ____________ **PAR #:** ______ **Fault Category:** ____________ **NCR:** Yes No **DQA:** _____ **Date:** _________

QA: N/C Closed: _____ **Date:** _________

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

DART AEROSPACE LTD	Work Order:	37420
Description: Saddle LH	Part Number:	D2917-1
Inspection Dwg: D2917 Rev. ~~A1~~ B 08.02.14		Page 1 of 1

Inspect dimensions highlighted on inspection sheet drawing D2917 Rev. A1 and record below:

				Recorded Actual Dimensions					
Dim	Min	Max	Go/No Go Gauge	1	2	3	4	By	Date
A	0.175	0.205		.189	.188	.187	.190		
B	0.090	0.110		.095	.098	.098	.099		
C	0.250	0.270		.260	.255	.255	.265		
D	1.599	1.619		1.611	1.611	1.611	1.611		
E	0.180	0.220		.180	.185	.185	.185		
F	0.277	0.297		.280	.280	.279	.286		
G	1.385	1.400		1.390	1.389	1.394	1.388		
H	3.170	3.230		3.213	3.210	3.205	3.204		
I	0.175	0.217		.167	.167	.175	.182		
J	0.470	0.530		.500	.500	.500	.500		
K	1.498	1.508		1.506	1.500	1.501	1.504		
L	4.436	4.446		4.441	4.437	4.441	4.441		
M	0.257	0.262	~~DT8683~~	.258	.260	.260	.260		
N	1.225	1.235		1.227	1.236	1.234	1.227		
O	1.103	1.113	08/09/10	1.110	1.108	1.109	1.109		
P	0.470	0.530		.500	.500	.500	.500		
Q	0.438	0.443	~~DT8682~~	.441	.441	.441	.442		
R	0.490	0.510		.500	.500	.500	.502		
S	1.745	1.755		1.500	1.500	1.500	1.500		
T	7.990	8.010		8.000	8.000	8.002	8.003		
U	3.495	3.505		3.500	3.500	3.500	3.500		
V	0.175	0.205		.178	.180	.199	.204		
W	~~1.990~~	~~2.010~~							
X	0.760	0.765		.760	.760	.760	.760		
Y	0.307	0.312		.312	.310	.310	.310		
Z	0.615	0.635		.620	.627	.627	.626		
AA	0.177	0.197		.185	.184	.186	.186		
W ~~AB~~	2.000	2.020		2.003	2.002	2.002	2.000		
AC									
AD									
AE									
AF									
AG									
AH									
Accept/Reject									

Measured by:	[signature]	Audited by	[signature]
Date:	08/03/12	Date:	08.03.08

Rev	Date	Change	Revised by	Approved
A	04.08.12	New Issue	KJ/JLM	
B	04.09.20	Added DT8683 & DT8682	KJ/JLM	

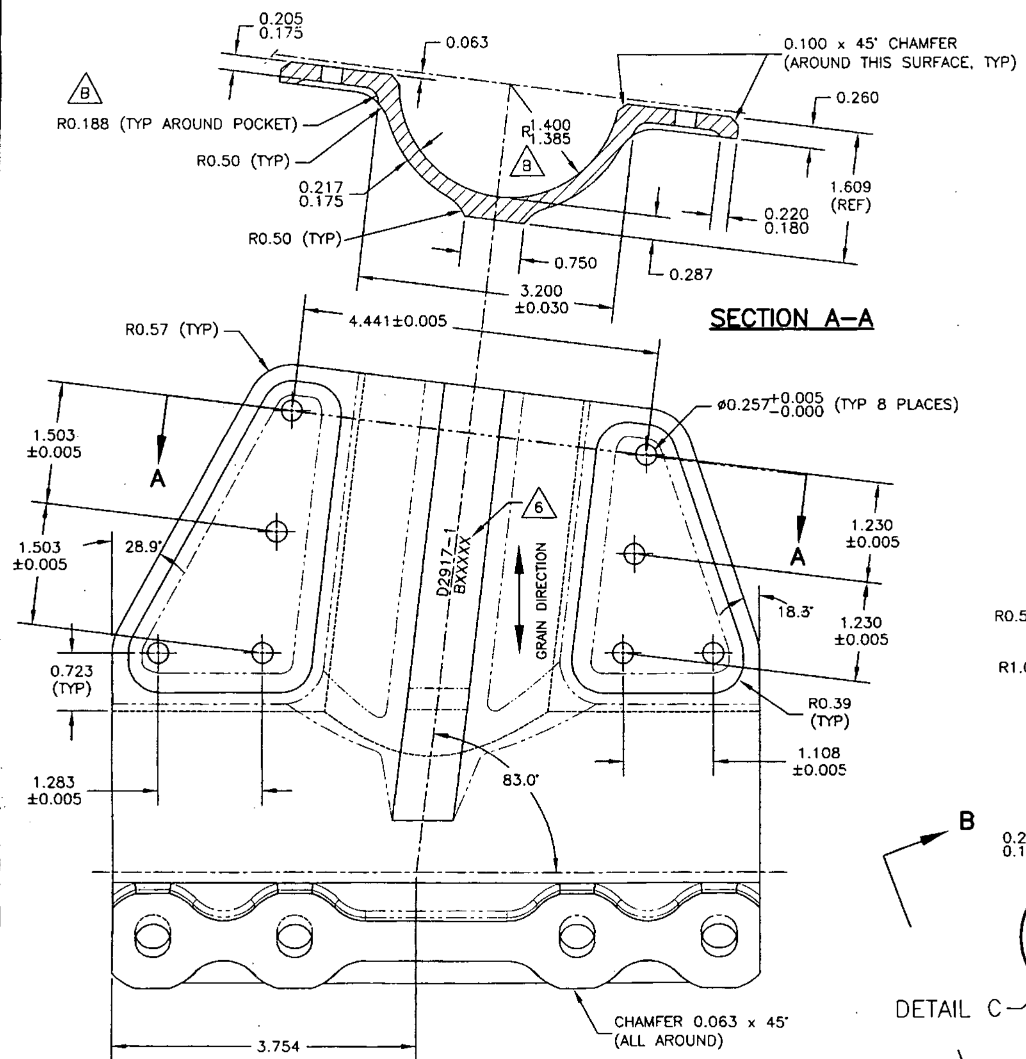
DART AEROSPACE LTD	Work Order:	37420
Description: Saddle LH	Part Number:	D2917-1
Inspection Dwg: D2917 Rev. ~~A1~~ B 08.02.14		Page 1 of 1

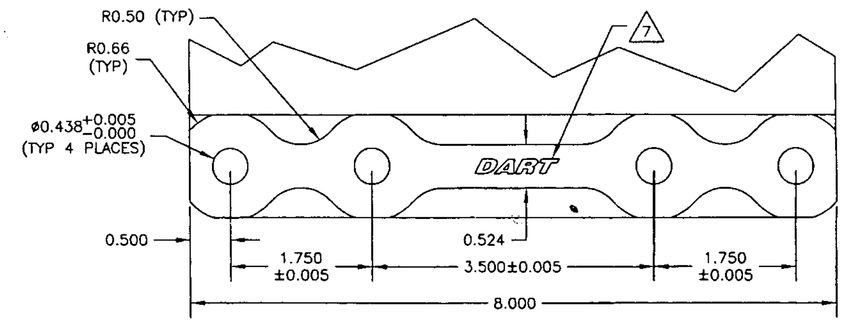
Inspect dimensions highlighted on inspection sheet drawing D2917 Rev. A1 and record below:

				Recorded Actual Dimensions					
Dim	Min	Max	Go/No Go Gauge	1	2	3	4	By	Date
A	0.175	0.205		.189	.195				
B	0.090	0.110		.095	.100				
C	0.250	0.270		.264	.266				
D	1.599	1.619		1.611	1.611				
E	0.180	0.220		.185	.185				
F	0.277	0.297		.284	.284				
G	1.385	1.400		1.390	1.394				
H	3.170	3.230		3.204	3.204				
I	0.175	0.217		.180	.179				
J	0.470	0.530		.500	.500				
K	1.498	1.508		1.505	1.505				
L	4.436	4.446		4.441	4.443				
M	0.257	0.262	~~DT8683~~	.260	.260				
N	1.225	1.235		1.233	1.233				
O	1.103	1.113	08/03/10	1.110	1.108				
P	0.470	0.530		.500	.500				
Q	0.438	0.443	~~DT8682~~	.441	.442				
R	0.490	0.510		.502	.502				
S	1.745	1.755		1.750	1.750				
T	7.990	8.010		8.002	8.002				
U	3.495	3.505		3.500	3.500				
V	0.175	0.205		.204	.204				
W	~~1.990~~	~~2.010~~							
X	0.760	0.765		.760	.760				
Y	0.307	0.312		.310	.310				
Z	0.615	0.635		.625	.625				
AA	0.177	0.197		0.185	.185				
W ~~AB~~	2.000	2.020		2.002	2.004				
AC									
AD									
AE									
AF									
AG									
AH									
Accept/Reject									

Measured by:	[signature]	Audited by	BG
Date:	08/03/12	Date:	04.03.12

Rev	Date	Change	Revised by	Approved
A	04.08.12	New Issue	KJ/JLM	
B	04.09.20	Added DT8683 & DT8682	KJ/JLM [initials]	[signature]



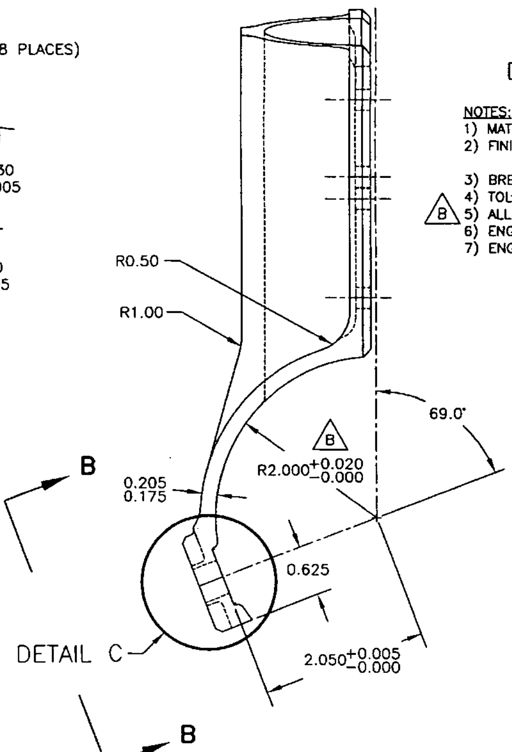


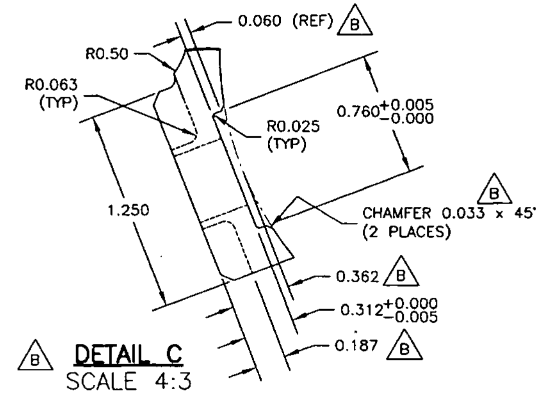
VIEW B-B

D2917-1 LH SADDLE (SHOWN)

D2917-2 RH SADDLE (OPPOSITE)

NOTES:
1) MATERIAL: ALUMINUM 6061-T6/T651 PER QQ-A-250/11
2) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1
   POWDER COAT GLOSS WHITE (REF 4.3.5.1) PER DART QSI 005 4.3
3) BREAK ALL SHARP EDGES 0.010 TO 0.020
4) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED.
5) B ALL DIMENSIONS ARE IN INCHES
6) ENGRAVE PART AND BATCH NUMBER IN THIS AREA TO MAX DEPTH OF 0.010
7) ENGRAVE DART LOGO TO MAX DEPTH OF 0.015 WITH MIN RAD 0.125





DETAIL C
SCALE 4:3

REV	DATE	DESCRIPTION
B	07.06.26	ADD 0.362, 0.187, 0.060, CHAMFER; ADD DETAIL C; R0.188 WAS R0.30; ADD TOL TO R2.000; ADD NOTES
A	04.05.31	NEW ISSUE

RELEASED
07.07.31

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SUBJECT TO AMENDMENT
WITHOUT NOTICE
WORK ORDER
NO. 3420

DESIGN	DRAWN BY	DART AEROSPACE LTD. HAWKESBURY, ONTARIO, CANADA
CHECKED: PH	APPROVED	DRAWING NO. D2917 — REV. B — SHEET 1 OF 1
DATE: 07.06.26		TITLE: SADDLE — SCALE 2:3

Bell saddles are held onto the crosstubes with 12 MS90354-1006 rivets but there is no friction force to resist twisting moments between the skidtube and the crosstube.

$Fsb := ncb \cdot Fsu1006$	$Fsb = 102000 \cdot lb$	Twisting force allowed before Bell saddle to crosstube rivets fail in shear

Bearing of the Fasteners on the Saddle Material

Ultimate Bearing Allowable

$Bud := Ff + ncd \cdot dcd \cdot txf \cdot Fbru3$	$Bud = 85836 \cdot lb$	Twisting force allowed before Dart saddles fail in bearing (ultimate)
$Bub1 := ncb \cdot dcb \cdot tmatf \cdot Fbru4 \cdot ff$	$Bub1 = 50819 \cdot lb$	Twisting force allowed before Bell fwd saddles fail in bearing (ultimate)
$Bub2 := ncb \cdot dcb \cdot tmata \cdot Fbru4 \cdot ff$	$Bub2 = 63015 \cdot lb$	Twisting force allowed before Bell aft saddles fail in bearing (ultimate)

Yield Bearing Allowable

$Byd := Ff + ncd \cdot dcd \cdot txf \cdot Fbry3$	$Byd = 75882 \cdot lb$	Twisting force allowed before Dart saddles yield in bearing (yield)
$Byb1 := ncb \cdot dcb \cdot tmatf \cdot Fbry4 \cdot ff$	$Byb1 = 37184 \cdot lb$	Twisting force allowed before Bell fwd saddles yield in bearing (yield)
$Byb2 := ncb \cdot dcb \cdot tmata \cdot Fbry4 \cdot ff$	$Byb2 = 46109 \cdot lb$	Twisting force allowed before Bell aft saddles yield in bearing (yield)

Margin of Safety

The above analysis shows that the Bell saddles will fail in bearing before the fasteners that hold the saddles onto the crosstubes fail. In the Dart configuration, the fasteners will fail in shear before the saddles will fail in bearing.

$MS6f := \frac{Fsd}{Byb1} - 1$	$MS6f = 1.14$	Margin of Safety - Dart fwd saddle-to-crosstube fastener failure
$MS6a := \frac{Fsd}{Byb2} - 1$	$MS6a = 0.73$	Margin of Safety - Dart aft saddle-to-crosstube fastener failure

7.4 Upper Saddle Strength Comparison Calcs done w/ tf = 0.167 in

This calculation checks the strength of the saddle material through the critical cross section illustrated in Figure 5 of Reference 1. The estimates for the inertia values and the area of this cross section are also shown in the Reference section.

$Lf := \frac{Ld}{2} - ctubefwd$	$Lf = 2.61 \cdot in$	Dart forward saddle flange length
$La := \frac{Ld}{2} - ctubeaft$	$La = 2.50 \cdot in$	Dart aft saddle flange length
$CGxf := ctubefwd + 0.5 \cdot Lf$	$CGxf = 2.69 \cdot in$	Dart forward Center of Gravity of flange
$CGyf := ctubefwd + tf + \frac{trf}{2}$	$CGyf = 1.60 \cdot in$	Dart forward Center of Gravity of rib
$CGxa := ctubeaft + 0.5 \cdot La$	$CGxa = 2.75 \cdot in$	Dart aft Center of Gravity of flange
$CGya := ctubeaft + tf + \frac{tra}{2}$	$CGya = 1.71 \cdot in$	Dart aft Center of Gravity of rib

$$Isxf := \frac{\pi}{4}\cdot\left[(ctubefwd + tf)^4 - ctubefwd^4\right] + 4\cdot\left(\frac{1}{12}\cdot tf\cdot Lf^3 + tf\cdot Lf\cdot CGxf^2\right) \qquad Isxf = 15.33\cdot in^4$$

$$Isyf := \frac{\pi}{4}\cdot\left[(ctubefwd + tf)^4 - ctubefwd^4\right] + 2\cdot\left[\frac{1}{12}\cdot 1.5\cdot tw\cdot trf^3 + 1.5\cdot tw\cdot trf\cdot CGyf^2 + Lf\cdot tf\cdot\left(\frac{g}{2} + \frac{tf}{2}\right)^2\right] \qquad Isyf = 2.26\cdot in^4$$

$$Asf := \pi\cdot\left[(ctubefwd + tf)^2 - ctubefwd^2\right] + 4\cdot tf\cdot Lf + 2\cdot 1.5\cdot tw\cdot trf \qquad Asf = 3.51\cdot in^2$$

$$Isxa := \frac{\pi}{4}\cdot\left[(ctubeaft + ta)^4 - ctubeaft^4\right] + 4\cdot\left(\frac{1}{12}\cdot ta\cdot La^3 + ta\cdot La\cdot CGxa^2\right) \qquad Isxa = 21.17\cdot in^4$$

$$Isya := \frac{\pi}{4}\cdot\left[(ctubeaft + ta)^4 - ctubeaft^4\right] + 2\cdot\left[\frac{1}{12}\cdot 1.5\cdot tw\cdot tra^3 + 1.5\cdot tw\cdot tra\cdot CGya^2 + Lf\cdot tf\cdot\left(\frac{g}{2} + \frac{tf}{2}\right)^2\right] \qquad Isya = 3.59\cdot in^4$$

$$Asa := \pi\cdot\left[(ctubeaft + ta)^2 - ctubefwd^2\right] + 4\cdot ta\cdot La + 2\cdot 1.5\cdot tw\cdot tra \qquad Asa = 5.75\cdot in^2$$

The inertias of the Bell saddles are based on the circular cross section shown in Figure 3 of Reference 1.

$Ibf := \frac{1}{4}\cdot\pi\cdot\left[(ctubefwd + tmatf)^4 - ctubefwd^4\right]$	$Ibf = 1.2\cdot in^4$	Bell forward saddle inertia
$Abf := \pi\cdot\left[(ctubefwd + tmatf)^2 - ctubefwd^2\right]$	$Abf = 1.14\cdot in^2$	Bell forward saddle area
$Iba := \frac{1}{4}\cdot\pi\cdot\left[(ctubeaft + tmata)^4 - ctubeaft^4\right]$	$Iba = 1.92\cdot in^4$	Bell aft saddle inertia
$Aba := \pi\cdot\left[(ctubeaft + tmata)^2 - ctubeaft^2\right]$	$Aba = 1.54\cdot in^2$	Bell aft saddle area

Ultimate Bending Allowable

$Mduf1 := \frac{Ftu3\cdot Isxf\cdot 2}{Ld}$	$Mduf1 = 160989\cdot lb\cdot in$	Dart fwd-aft bending allowable for forward saddle
$Mduf2 := \frac{Ftu3\cdot Isyf}{ctubefwd + txf}$	$Mduf2 = 57502\cdot lb\cdot in$	Dart inboard-outboard bending allowable for fwd saddle
$Mdua1 := \frac{Ftu3\cdot Isxa\cdot 2}{Ld}$	$Mdua1 = 222239\cdot lb\cdot in$	Dart fwd-aft bending allowable for forward saddle
$Mdua2 := \frac{Ftu3\cdot Isya}{ctubeaft + txa}$	$Mdua2 = 83083\cdot lb\cdot in$	Dart inboard-outboard bending allowable for aft saddle
$Mbuf := \frac{Ftu4\cdot Ibf\cdot ff}{ctubefwd + tmatf}$	$Mbuf = 45392\cdot lb\cdot in$	Bell bending allowable for forward saddle
$Mbua := \frac{Ftu4\cdot Iba\cdot ff}{ctubeaft + tmata}$	$Mbua = 66227\cdot lb\cdot in$	Bell bending allowable for aft saddle

$MS7f := \frac{Mduf1}{Mbuf} - 1$	$MS7f = 2.55$ wcs 2.72	Margin of Safety - Dart fwd-aft bending allowable for forward saddle (ultimate)
$MS7a := \frac{Mdua1}{Mbua} - 1$	$MS7a = 2.36$ wcs 2.36	Margin of Safety - Dart fwd-aft bending allowable for aft saddle (ultimate)
$MS8f := \frac{Mduf2}{Mbuf} - 1$	$MS8f = 0.27$ wcs 0.30	Margin of Safety - Dart inboard-outboard bending allowable for forward saddle (ultimate)
$MS8a := \frac{Mdua2}{Mbua} - 1$	$MS8a = 0.25$ wcs 0.26	Margin of Safety - Dart inboard-outboard bending allowable for aft saddle (ultimate)

Compressive Yield Bending Allowable

$Mdycf1 := \frac{Fcy3 \cdot Isxf \cdot 2}{Ld}$	$Mdycf1 = 134158 \cdot lb \cdot in$	Dart fwd-aft bending allowable for forward saddle
$Mdycf2 := \frac{Fcy3 \cdot Isyf}{ctubefwd + txf}$	$Mdycf2 = 47918 \cdot lb \cdot in$	Dart inboard-outboard bending allowable for fwd saddle
$Mdyca1 := \frac{Fcy3 \cdot Isxa \cdot 2}{Ld}$	$Mdyca1 = 185199 \cdot lb \cdot in$	Dart fwd-aft bending allowable for forward saddle
$Mdyca2 := \frac{Fcy3 \cdot Isya}{ctubeaft + txa}$	$Mdyca2 = 69236 \cdot lb \cdot in$	Dart inboard-outboard bending allowable for aft saddle
$Mbyf := \frac{Fcy4 \cdot Ibf \cdot ff}{ctubefwd + tmatf}$	$Mbyf = 41202 \cdot lb \cdot in$	Bell bending allowable for forward saddle
$Mbya := \frac{Fcy4 \cdot Iba \cdot ff}{ctubeaft + tmata}$	$Mbya = 60114 \cdot lb \cdot in$	Bell bending allowable for aft saddle
$MS9f := \frac{Mdycf1}{Mbyf} - 1$	$MS9f = 2.26$ was 2.42	Margin of Safety - Dart fwd-aft bending allowable for forward saddle (compressive yield)
$MS9a := \frac{Mdyca1}{Mbya} - 1$	$MS9a = 2.08$ was 2.08	Margin of Safety - Dart fwd-aft bending allowable for aft saddle (compressive yield)
$MS10f := \frac{Mdycf2}{Mbyf} - 1$	$MS10f = 0.16$ was 0.19	Margin of Safety - Dart inboard-outboard bending allowable for forward saddle (compressive yield)
$MS10a := \frac{Mdyca2}{Mbya} - 1$	$MS10a = 0.15$ was 0.15	Margin of Safety - Dart inboard-outboard bending allowable for aft saddle (compressive yield)

Tensile Yield Bending Allowable

$Mdytf1 := \frac{Fty3 \cdot Isxf \cdot 2}{Ld}$	$Mdytf1 = 134158 \cdot lb \cdot in$	Dart fwd-aft bending allowable for forward saddle
$Mdytf2 := \frac{Fty3 \cdot Isyf}{ctubefwd + txf}$	$Mdytf2 = 47918 \cdot lb \cdot in$	Dart inboard-outboard bending allowable for fwd saddle
$Mdyta1 := \frac{Fty3 \cdot Isxa \cdot 2}{Ld}$	$Mdyta1 = 185199 \cdot lb \cdot in$	Dart fwd-aft bending allowable for forward saddle
$Mdyta2 := \frac{Fty3 \cdot Isya}{ctubeaft + txa}$	$Mdyta2 = 69236 \cdot lb \cdot in$	Dart inboard-outboard bending allowable for aft saddle

$Mbyf := \frac{Fty4 \cdot Ibf \cdot ff}{ctubefwd + tmatf}$	$Mbyf = 39107 \cdot lb \cdot in$	Bell bending allowable for forward saddle
$Mbya := \frac{Fty4 \cdot Iba \cdot ff}{ctubeaft + tmata}$	$Mbya = 57057 \cdot lb \cdot in$	Bell bending allowable for aft saddle
$MS11f := \frac{Mdytf1}{Mbyf} - 1$	$MS11f = 2.43$ was 2.6	Margin of Safety - Dart fwd-aft bending allowable for forward saddle (tensile yield)
$MS11a := \frac{Mdyta1}{Mbya} - 1$	$MS11a = 2.25$ was 2.25	Margin of Safety - Dart fwd-aft bending allowable for aft saddle (tensile yield)
$MS12f := \frac{Mdytf2}{Mbyf} - 1$	$MS12f = 0.23$ was 0.25	Margin of Safety - Dart inboard-outboard bending allowable for forward saddle (tensile yield)
$MS12a := \frac{Mdyta2}{Mbya} - 1$	$MS12a = 0.21$ was 0.22	Margin of Safety - Dart inboard-outboard bending allowable for aft saddle (tensile yield)

Shear Allowable

$Fsudf := Fsu3 \cdot Asf$	$Fsudf = 94752 \cdot lb$	Dart shear force allowable
$Fsuda := Fsu3 \cdot Asa$	$Fsuda = 155204 \cdot lb$	Dart shear force allowable
$Fsubf := Fsu4 \cdot Abf \cdot ff$	$Fsubf = 40101 \cdot lb$	Bell shear force allowable for forward saddle
$Fsuba := Fsu4 \cdot Aba \cdot ff$	$Fsuba = 54078 \cdot lb$	Bell shear force allowable for aft saddle
$MS13f := \frac{Fsudf}{Fsubf} - 1$	$MS13f = 1.36$ was 1.46	Margin of Safety - Dart shear allowable for fwd saddle
$MS13a := \frac{Fsuda}{Fsuba} - 1$	$MS13a = 1.87$ was 1.87	Margin of Safety - Dart shear allowable for aft saddle

Margins positive & parts OK with 0.167 wall
08.03.11

8.0 Skidtube Comparisons

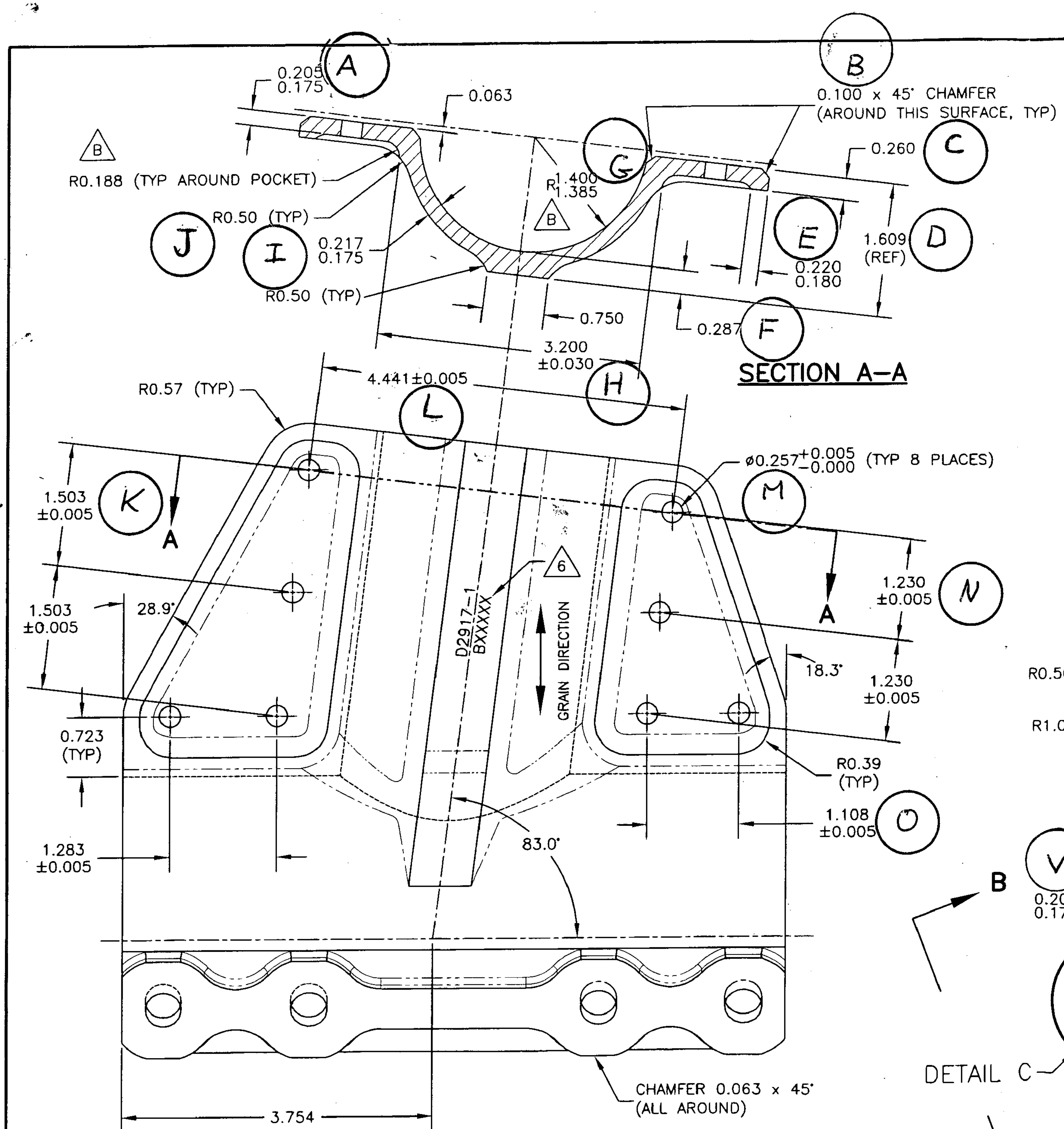
8.1 General Information

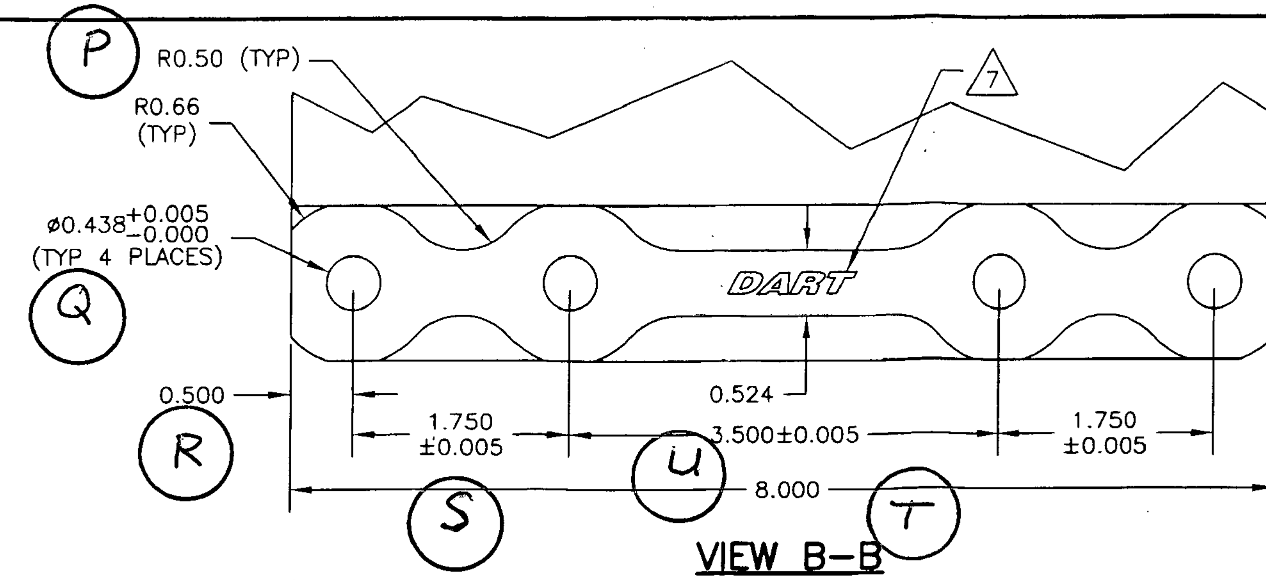
It is an important aspect of skidtube design that the structure maintain its shape to preserve inertial properties. Experience has shown that round tubes lose at least 10% of their primary inertial properties under bending conditions.

$fb := 0.90$

Secondly, the analysis of section 7.4 shows that Dart saddles are significantly stiffer than Bell saddles in the principal skidtube bending direction therefore increasing the rigidity of the supports in a beam analysis. In terms of bending moments resulting from a centrally located load P over a beam of length L, a pinned-pinned beam must be designed for bending moments of the magnitude PL/4 while a fixed-fixed beam must be designed for bending moments of the magnitude PL/8. The allowable bending moments in a pinned-pinned beam are therefore half of the allowable bending moments in fixed-fixed beam. Because of the difference in end conditions between a Dart skidtube and a Bell skidtube, a reduction factor will be applied to the allowable bending moments in Bell skidtubes.

$fe := 0.90$



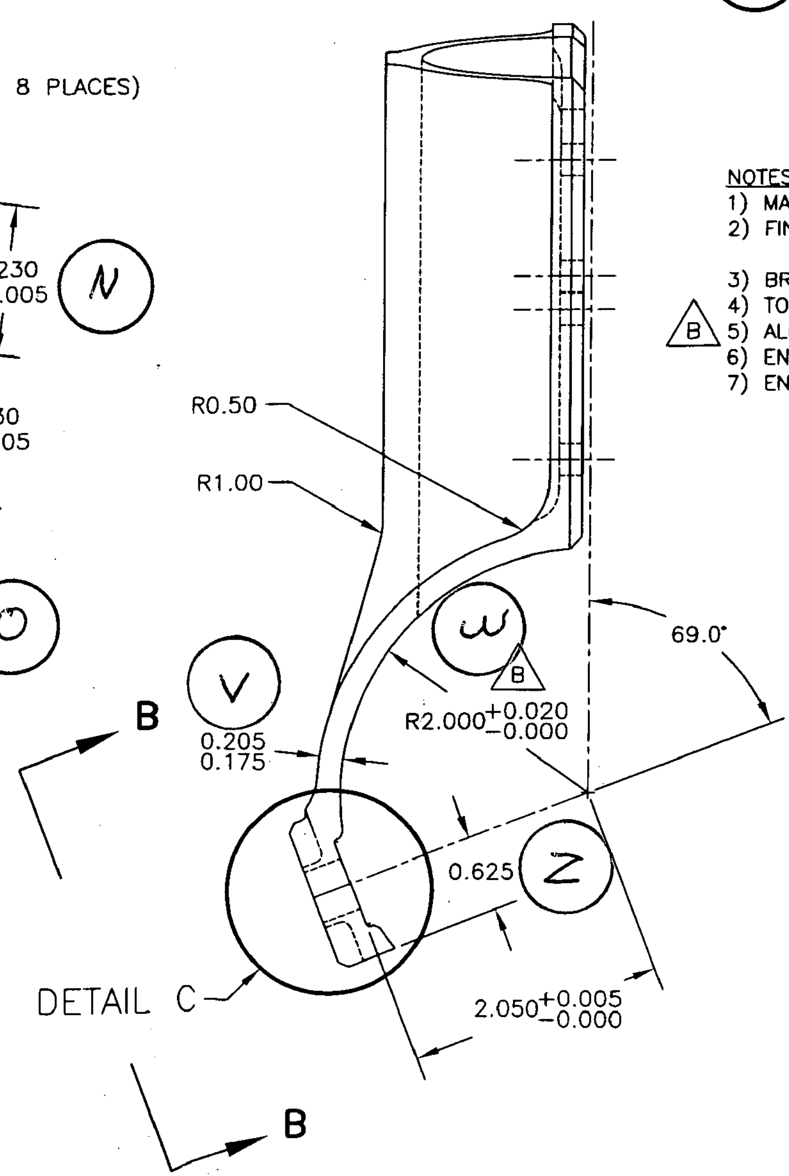


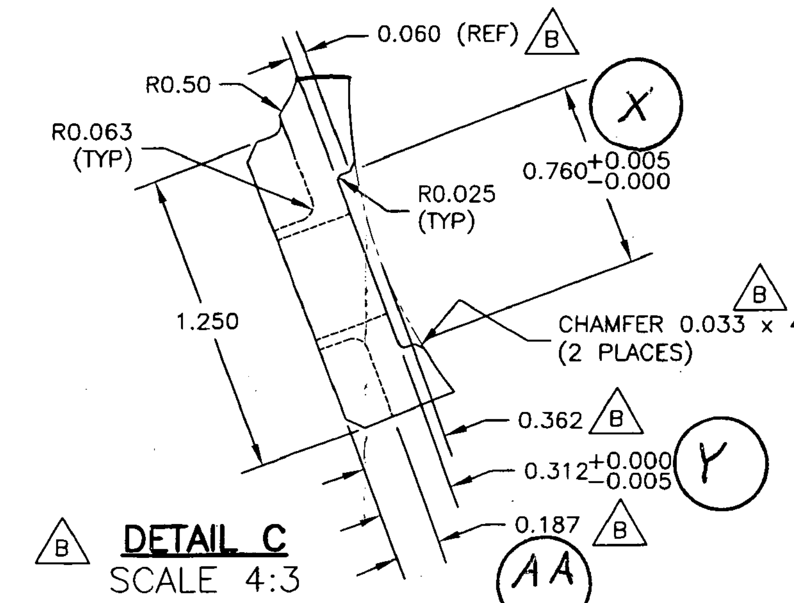
D2917-1 LH SADDLE (SHOWN)

D2917-2 RH SADDLE (OPPOSITE)

NOTES:

1) MATERIAL: ALUMINUM 6061-T6/T651 PER QQ-A-250/11
2) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1
   POWDER COAT GLOSS WHITE (REF 4.3.5.1) PER DART QSI 005 4.3
3) BREAK ALL SHARP EDGES 0.010 TO 0.020
4) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED.
5) ALL DIMENSIONS ARE IN INCHES
6) ENGRAVE PART AND BATCH NUMBER IN THIS AREA TO MAX DEPTH OF 0.010
7) ENGRAVE DART LOGO TO MAX DEPTH OF 0.015 WITH MIN RAD 0.125





DETAIL C
SCALE 4:3

REV	DATE	DESCRIPTION
B	07.06.26	ADD 0.362, 0.187, 0.060, CHAMFER; ADD DETAIL C; R0.188 WAS R0.30; ADD TOL TO R2.000; ADD NOTES
A	04.05.31	NEW ISSUE

RELEASED
07.07.31

DESIGN: GP	DRAWN BY: CB	DART	DART AEROSPACE LTD. HAWKESBURY, ONTARIO, CANADA
CHECKED: PH	APPROVED:	DRAWING NO. D2917	REV. B SHEET 1 OF 1
DATE: 07.06.26		TITLE: SADDLE	SCALE 2:3

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